Claims

What is claimed is:

5   1.   A method for propagating information in a network
having a plurality of routers and a plurality of
circuit switches, the method comprising:

        assigning an index number to an interface in
a circuit switch in the plurality of circuit

10   switches; and

        transmitting the index number from a router
to at least another router in the plurality of
routers using a packet in accordance with a
protocol used by the plurality of routers to

15   communicate among each other.

      2.   The method of claim 1 wherein the protocol
includes Open Shortest Path First (OSPF).

20   3.   The method of claim 1 wherein the protocol
includes Routing Information Protocol (RIP).

      4.   The method of claim 1 wherein a network
element includes said circuit switch and said router,

25   said network element including a memory encoded with a
table, the table including the index number.

      5.   The method of claim 4 wherein the table
includes information indicating a function of a link

30   that couples the interface to another interface in
another circuit switch.

      6.   The method of claim 1 wherein a network
element includes said circuit switch and said router,

and wherein another circuit switch and said another router are included in another network element, the method further comprising:

said network element storing the index number in a first table;

said network element segmenting the packet into a plurality of units;

said network element forming a plurality of frames equal in number to the plurality of units, each frame including one unit in the plurality of units;

said another network element reassembling the plurality of units into the packet; and

said another network element storing the index number in a second table.

7. The method of claim 6 wherein each unit in the plurality of units is included in a header of a frame in the plurality of frames.

8. The method of claim 7 wherein the plurality of frames conform to a format selected from a group consisting of Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH).

9. The method of claim 8 wherein each unit is in a Data Communications Channel (DCC).

10. The method of claim 6 wherein each unit is included in a payload of a frame in the plurality of frames.

11. The method of claim 6 wherein the first table and the second table both include information

indicating a predetermined number of contiguous frames that may be transmitted over a link that couples said interface to another interface in said another circuit switch.

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12. The method of claim 6 wherein the first table and the second table both include information indicating a function of a link that couples said interface to another interface in said another circuit

10 switch.

13. A method for propagating information in a network comprising:

automatically assigning a number to an

15 interface;

automatically transmitting said number on said interface;

automatically transmitting said number on at least one additional interface; and

20 wherein said interface and said one additional interface are interfaces among a plurality of interfaces in a circuit switch.

14. The method of claim 13 further comprising the

25 act of automatically transmitting said number on all enabled interfaces in said circuit switch.

15. The method of claim 13 wherein said interface and said one additional interface conform to a protocol

30 selected from a group consisting of Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH).

16. The method of claim 13 further comprising:

storing said number in a first table in a network element including said circuit switch; and

wherein at least another network element in
5   the network stores said number in a second table.

17. A network comprising:

a first circuit switch having a first interface, the first interface having assigned
10   thereto a first identifier;

a second circuit switch having a second interface, the second interface having assigned thereto a second identifier;

a plurality of memory locations in said first
15   circuit switch containing a first table, the first table including each of said first identifier and said second identifier;

a plurality of memory locations in said second circuit switch containing a second table,
20   the second table including each of said first identifier and said second identifier; and

a link coupling said first interface to said second interface.

25   18. The network of claim 17 wherein the link includes a fiber optic cable.

19. The network of claim 17 wherein said first circuit switch and said second circuit switch use a
30   protocol selected from a group consisting of Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH).

20. The network of claim 17 wherein the first table and the second table both contain an entry indicating the function of said link.

5   21. The network of claim 17 wherein the first table and the second table both contain an entry indicating a predetermined number of contiguous frames that may be transmitted over said link.

10   22. A network element comprising:

(a) a router;

(b) a circuit switch; and

(c) an interface, said interface generating an output signal comprising:

15   (i) a first unit of information uniquely identifying said interface from among a plurality of interfaces in said network element;

            (ii) a second unit of information

20   indicating a physical location of said interface in said network element; and

            (iii) a third unit of information indicating a physical address of said network element.

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23. The network element of claim 22 wherein said output signal further comprises:

a fourth unit of information indicating the function of a link which couples said interface to

30   another interface in a circuit network.

24. The network element of claim 22 wherein said output signal further comprises:

a fourth unit of information which indicates
a predetermined number of contiguous frames that
may be transported over a link which couples said
interface to another interface in a circuit
5   network.

25.   An article of manufacture comprising:
a computer readable medium containing a
computer readable program code for propagating
10   information in a network having a plurality of
routers and a plurality of circuit switches, said
computer readable program code in said article of
manufacture comprising:
computer readable program code for assigning
15   an index number to an interface in a circuit
switch in the plurality of circuit switches; and
computer readable program code for
transmitting the index number from a router to at
least another router in the plurality of routers
20   using a packet in accordance with a protocol used
by the plurality of routers to communicate among
each other.

26.   The article of manufacture of claim 1 wherein
25   the protocol includes Open Shortest Path First (OSPF).

27.   An article of manufacture comprising:
a computer readable medium containing a
computer readable program code for propagating
30   information in a network, said computer readable
program code in said article of manufacture
comprising:
computer readable program code for
automatically assigning a number to an interface;

computer readable program code for automatically transmitting said number on said interface;

computer readable program code for automatically transmitting said number on at least one additional interface; and

wherein said interface and said one additional interface are interfaces among a plurality of interfaces in a circuit switch.